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Streambank Protection Project  
Little River (Little River Lower Dam)  
Belfast, Maine

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# **Operation and Maintenance Manual**

September 1992



**US Army Corps  
of Engineers**  
New England Division

OPERATION AND MAINTENANCE MANUAL  
EMERGENCY STREAMBANK PROTECTION PROJECT  
LITTLE RIVER (LITTLE RIVER LOWER DAM)  
BELFAST, MAINE

FOREWORD

The Belfast streambank protection project, consisting of a precast concrete modular wall, was designed and constructed to stabilize the Little River Lower Dam's south wing wall. The successful functioning of the streambank stabilization works is not assured solely by the construction of the precast concrete modular wall along the streambank since the forces of nature, in this case, high velocity flows and flood stages will continue to attack the streambank. If the system is to perform the functions for which it was designed, it must be carefully maintained not only during periods of normal flow stages, but also during subsequent flood periods.

The purpose of this manual is to provide information regarding actual maintenance procedures and outline the responsibilities of the parties involved. In general, the regulations assess non-Federal interests as having responsibility for operation and maintenance of the project. Therefore, the town of Belfast should assure that several local individuals be familiar with this project and have a thorough understanding of the recommended methods of maintaining the system.

The general flood control Regulations for Operation and Maintenance of Flood Control Works quoted herein were approved by the acting Secretary of War on 9 August 1944. Established by the Department of Defense, the improvement of rivers and harbors and other waterways for flood control and other purposes, formerly under jurisdiction of the Secretary of War, became the responsibility of the Secretary of the Army. References herein to the Secretary of War and War Department shall be construed to mean, respectively, the Secretary of the Army and the Department of the Army. Where reference is made to the Division Engineer in the Regulations included in this manual, it shall be construed to mean the Division Engineer, New England Division, Corps of Engineers.

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BELFAST, MAINE

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## SECTION I

### INTRODUCTION

#### 1. AUTHORIZATION

The construction of the streambank stabilization project along Little River in the town of Belfast, Maine, was authorized by the Chief of Engineers on May 23, 1988, pursuant to the authority contained in Section 14 of the 1946 Flood Control Act, as amended.

#### 2. LOCATION

The town of Belfast is located approximately twenty miles south of Bangor on Maine's southern shoreline. The Little River Lower Dam, which is owned by the Belfast Water District, is located approximately two miles south of the center of Belfast and approximately 700 feet upstream from the river's confluence with Belfast Bay. The original stone masonry dam was built in 1887 and reconstructed following a breach from high waters in 1943. The dam is a run-of-the-river dam of concrete and dry-stone masonry construction. It is 30 feet high (distance between headwater and tailwater) and 126 feet long with a 91-foot long ogee spillway section. Although the reservoir served as the primary source of water for a poultry processing plant until 1979, when the plant was destroyed by flooding, the present primary function is as an emergency water supply source for the town of Belfast, Maine.

#### 3. DESCRIPTION OF DAMAGE

The streambank erosion problem began adjacent to the Little River Lower Dam's south wing wall and extended approximately 60 feet downstream. Continued erosion would have resulted in total failure of the wing wall which in turn would have increased the rate of erosion around the dam's abutment. This would eventually lead to the displacement of the abutment and a breach through the earth embankment. A three-foot section of the wing wall foundation failed during the course of the project study supporting the finding that the dam was in imminent danger of failure. The loss of the dam and impounded reservoir would have been a serious loss since it serves as the emergency water supply source for the town of Belfast, Maine.

#### 4. DESCRIPTION OF PROJECT

The project consists of replacing the existing wing wall with approximately 80 linear feet of precast concrete modular wall. The wall varies in height from 10 to 20 feet and varies in thickness from four to eight feet. The modules are backfilled with compacted gravel and the wall is supported on a concrete footing bearing on bedrock. Compacted gravel fill was placed behind the wall.

#### 5. PROTECTION PROVIDED

The streambank stabilization will prevent further erosion of the wing wall and will maintain the integrity of the Little River Lower Dam's abutment.

#### 6. CONSTRUCTION HISTORY

The project was constructed by the Colwell Construction Co., Augusta, ME during the period from September 7, 1988 to December 9, 1989 at a cost of \$137,904.

#### 7. ASSURANCES OF LOCAL COOPERATION

The Army Corps of Engineers and the town of Belfast entered into an agreement for local cooperation for this streambank stabilization project on June 23, 1988. The agreement provides that the local sponsor shall, among other required responsibilities, maintain the project after its completion without cost to the Federal Government. A copy of the formal local assurances is included as Appendix B.

#### 8. PLANS

A reduced size drawing showing the project as actually constructed is included as Appendix D.

## SECTION II

### GENERAL REGULATIONS

#### 9. PURPOSE OF THIS MANUAL

The purpose of this manual is to present detailed information to be used as a guide in complying with "Flood Control Regulations - Maintenance and Operation of Flood Control Works" as approved by the Acting Secretary of War on 9 August 1944, and published in this volume as Appendix A. In executing assurances of local cooperation, the town of Belfast has agreed to maintain and operate the completed works in accordance with these regulations. The regulations which are intended to cover all local protection projects constructed by the Department throughout the United States are general in nature, and obviously cannot give detailed instructions for the maintenance and operation of a specific project. The details set forth in this manual for maintenance and operation for the Belfast project are intended to supplement the regulations to permit obtaining all the benefits and protection against erosion for which the project was designed. Failure to maintain and operate the project as required by the regulations and as detailed herein could cause property losses and could result in an irreparable loss of confidence in the streambank protection system.

#### 10. GENERAL RULES AND REGULATIONS

Paragraph 208.10 (a) of the regulations prescribed by the Secretary of War gives general rules for the maintenance and operation of structures and facilities constructed by the United States for local protection. Applicable portions are quoted below to avoid the necessity for cross reference and are further defined by remarks under each quotation.

"(1) The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits;"

These requirements cannot be overstressed, and the town authorities must make adequate provisions for funds, personnel, equipment and materials to allow for the proper maintenance and operation of the streambank protective works.

"(2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with the regulations prescribed by the Secretary of War, as required by law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent", who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States;"

The committee should be composed of competent members, preferably persons experienced in engineering or construction works. The committee must be given broad authority to carry out its responsibilities. The name, address and office and home telephone numbers of the Superintendent, and any changes thereof, shall be promptly furnished to the Division Engineer, New England Division, Corps of Engineers, 424 Trapelo Road, Waltham, Massachusetts.

(3) N/A

"(4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the right-of-ways for the protective facilities;"

Right-of-ways and easements have been established for which access to the project can be provided in order to allow equipment which may be necessary to perform the maintenance of the project. These right-of-ways are essential and must be kept open at all times.

"(5) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-way, nor shall any change be made in any feature of the works without prior determination by the Division Engineer of the War Department or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the Division Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work;"

Any contemplated improvements or alterations as outlined above must be submitted to the U.S. Army Corps of Engineers, New England Division, 424 Trapelo Road, Waltham, Massachusetts, and the approval of the Division Engineer obtained prior to the town authorizing the work. All requests for approval shall be in writing and complete drawings in duplicate. Both sets, which shall be in reproducible form, must be submitted along with a full description of the work intended. The town will be held responsible for obtaining prior approval from the Corps of Engineers for any improvements or alterations proposed by itself, private parties or any public parties. The town shall furnish the Division Engineer as-built drawings, in duplicate, of the completed work.

"(6) It shall be the duty of the Superintendent to submit a semi-annual report to the Division Engineer covering inspection, maintenance, and operation of the protective works;"

See paragraph 13 of this SECTION for instructions on submitting reports.

"(7) The Division Engineer or his authorized representatives shall have access at all times to all portions of the protective works;"

The Division Engineer or his representatives will make periodic inspections of the protective works to determine if the project is being properly maintained and operated by the town.

"(8) Maintenance measures or repairs which the Division Engineer deems necessary shall be promptly taken or made;"

The town should maintain the facilities and keep them in good repair and not wait for the Division Engineer to call such matters to its attention. Upon request, the Division office will advise the town how to make any major repairs to the facilities.

"(9) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods;"

The project is designed to provide bank stabilization and to protect the Little River Lower Dam's south wing wall against erosion.

"(10) The War Department will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under these regulations;"

The flood control committee should familiarize itself with the contents of this manual. The town authorities are encouraged to call on the Division Office of the Corps of Engineers for any additional advice or instructions required by them in carrying out the town's obligations for maintaining and operating the protection facilities.

## 11. MAINTENANCE

a. The word "maintenance" as used in this manual applies to the upkeep, repair, replacement and care of the work constructed by the United States and turned over to the town. If the work is neglected there will be deterioration and possible failure in flood time when there is dire need of dependable protection.

b. Maintenance includes a regular walking inspection over the entire system. The purpose of the inspection is to detect any deterioration of project features that indicates a need for repair or replacement, and also to detect any restrictions in the stream, channel or floodway that reduces flow capacity.



## 12. OPERATION

a. The term "operation" as used in this manual, refers to the actual functions of the various features of the protection works during abnormal river stages.

b. When abnormal river stages are expected, it is important that the Superintendent make immediate decisions, take prompt action and has the authority to carry out his decisions to insure proper continued operation of the protection works.

c. To insure correct operation, the following items are considered to be essential:

(1) At least one person (preferably 2 or 3) be familiar with the protection works including the various types of materials comprising the streambank protection works.

(2) The sources of these materials should be established ahead of time. If possible a small amount of each type of material should be stockpiled nearby for quick use.

(3) Sufficient loading, hauling and placing equipment should be readily available for providing and placing the repair materials.

(4) Sufficient experienced personnel should be readily available for patrolling and performing the repair work.

## 13. REPORTS

a. The regulations prescribed by the Secretary of the Army call for semi-annual reports to be submitted by the Superintendent to the Division Engineer covering inspection and maintenance. Inspection of the protective facilities shall be made immediately prior to flood seasons, immediately following floods, and otherwise at intervals not exceeding 90 days as required by regulations.

b. To assist the Superintendent in making his inspection, a sample form is included in Appendix C. The Superintendent shall have additional copies printed for use in submitting his reports.

c. The semi-annual reports shall be submitted in triplicate to the Division Engineer each May and November. The reports will be submitted in letter form with copies of the inspection forms covering the inspections made during the period of the reports. The reports shall cover the following points:

(1) A description of the maintenance work performed in the preceding six months.

(2) The number and classification of men working on maintenance, regularly and intermittently.

(3) Description of any work performed by contract on the repair or improvements of the project.

### SECTION III

#### STREAMBANK PROTECTION WORK

##### 14. DESCRIPTION

The streambank stabilization work accomplished by the Army Corps of Engineers consists of replacing the existing wing wall with approximately 80 linear feet of precast concrete modular wall. The wall varies in height from 10 to 20 feet and varied in thickness from four to eight feet. The modules were backfilled with compacted gravel. The wall is supported on a concrete footing bearing on bedrock. Compacted gravel fill was placed behind the wall.

##### 15. MAINTENANCE

Paragraph 208.10(g) (1) of the prescribed regulations sets forth rules for the maintenance of retaining walls. These rules are quoted below, followed by brief comments where applicable to clarify these rules as they apply to the project.

Retaining Walls - (1) Maintenance. - Periodic inspections shall be made by the Superintendent to be certain that:

"(i) N/A"

"(ii) No undue settlement has occurred which affects the stability of the wall;"

"(iii) No trees exist, the roots of which might extend under the wall and affect the stability of the wall;"

"(iv) The concrete has not undergone cracking, chipping, or breaking to an extent which might affect the stability of the wall;"

"(v) There are no encroachments upon the right-of-way which might endanger the structure or hinder its functioning in time of flood;"

"(vi) Care is being exercised to prevent accumulation of trash and debris adjacent to walls, and to insure that no fires are being built near them;"

"(vii) No bank caving conditions exist riverward of the wall which might endanger its stability;"

"(viii) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;"

##### 16. OPERATION

Paragraph 208.10(c) (2) of the prescribed regulations gives rules for operation of channel. These rules are paraphrased below with regard to the project.

(1) Operation. The retaining wall shall be patrolled during flood periods to locate possible leakage at monolith joints or seepage underneath the wall. Immediate steps shall be taken to correct any condition which endangers the stability of the wall. Immediate appropriate measures shall be taken to prevent the formation of jams of ice or debris, and large objects which become lodged against the wall shall be removed. The project shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snags and other debris shall be removed.

(2) Operations Restrictions. Repair work may be accomplished from the top of the bank or streambed as appropriate. Heavy equipment must be kept off the retaining wall to avoid structural damage to the wall. Any O&M activities should be accomplished from the bottom of the streambed.

**APPENDIX A**

**REGULATIONS PRESCRIBED  
BY THE  
SECRETARY OF THE ARMY**

## TITLE 33-NAVIGATION AND NAVIGABLE WATERS

### Chapter II-Corps of Engineers War Department-Part 208-Flood Control Regulations Maintenance and Operation of Flood Control Works

(Retyped verbatim from  
original document)

Pursuant to the provisions of Section 3 of the Act of Congress approved June 22, 1936, as amended and supplemented (49 Stat. 1571; 50 Stat. 877; and 55 Stat. 638; 33 U.S.C. 701c; 701c-1), the following regulations are hereby prescribed to govern the maintenance and operation of flood control works:

*208.10 Local flood protection works; maintenance and operation of structures and facilities-* (a) *General.*

(1) The structures and facilities constructed by the United States for local flood protection shall be continuously maintained in such a manner and operated at such times and for such periods as may be necessary to obtain the maximum benefits.

(2) The State, political subdivision thereof, or other responsible local agency, which furnished assurance that it will maintain and operate flood control works in accordance with the regulations prescribed by the Secretary of War, as required by law, shall appoint a permanent committee consisting of or headed by an official hereinafter called the "Superintendent", who shall be responsible for the development and maintenance of, and directly in charge of, an organization responsible for the efficient operation and maintenance of all of the structures and facilities during flood periods and for continuous inspection and maintenance of the project works during periods of low water, all without cost to the United States.

(3) A reserve supply of materials needed during a flood emergency shall be kept on hand at all times.

(4) No encroachment or trespass which will adversely affect the efficient operation or maintenance of the project works shall be permitted upon the rights-of-way for the protective facilities.

(5) No improvement shall be passed over, under, or through the walls, levees, improved channels or floodways, nor shall any excavation or construction be permitted within the limits of the project right-of-way, nor shall any change be made in any feature of the works without prior determination by the District

Engineer of the War Department or his authorized representative that such improvement, excavation, construction, or alteration will not adversely affect the functioning of the protective facilities. Such improvements or alterations as may be found to be desirable and permissible under the above determination shall be constructed in accordance with standard engineering practice. Advice regarding the effect of proposed improvements or alterations on the functioning of the project and information concerning methods of construction acceptable under standard engineering practice shall be obtained from the District Engineer or, if otherwise obtained, shall be submitted for his approval. Drawings or prints showing such improvements or alterations as finally constructed shall be furnished the District Engineer after completion of the work.

(6) It shall be the duty of the Superintendent to submit a semi-annual report to the District Engineer covering inspection, maintenance, and operation of the protective works.

(7) The District Engineer or his authorized representatives shall have access at all times to all portions of the protective works.

(8) Maintenance measures or repairs which the District Engineer deems necessary shall be promptly taken or made.

(9) Appropriate measures shall be taken by local authorities to insure that the activities of all local organizations operating public or private facilities connected with the protective works are coordinated with those of the Superintendent's organization during flood periods.

(10) The War Department will furnish local interests with an Operation and Maintenance Manual for each completed project, or separate useful part thereof, to assist them in carrying out their obligations under these regulations.

(b) *Levees-*(1) *Maintenance.* The Superintendent shall provide at all times such maintenance as may be required to insure serviceability of the structures in time of flood. Measures shall be taken to promote the growth of sod, exterminate burrowing animals, and to provide for routine mowing of the grass and weeds, removal of wild growth and drift deposits, and repair of damage caused by erosion or other forces. Where practicable, measures shall be taken to retard bank erosion by planting of willows or other suitable

growth areas riverward of the levees. Periodic inspections shall be made by the Superintendent to insure that the above maintenance measures are being effectively carried out and further, to be certain that:

(i) No unusual settlement, sloughing, or material loss of grade or levee cross-section has taken place;

(ii) No caving has occurred on either the land side or the river side of the levee which might affect the stability of the levee section;

(iii) No seepage, saturated areas, or sand boils are occurring;

(iv) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged;

(v) Drains through the levees and gates on said drafters are in good working condition;

(vi) No revetment work or riprap has been displaced, washed out, or removed;

(vii) No action is being taken, such as burning grass and weeds during appropriate seasons, which will retard or destroy the growth of the sod;

(viii) Access roads to and on the levee are being properly maintained;

(ix) Cattle guards and gates are in good condition;

(x) Crown of levee is shaped so as to drain readily, and roadway thereon, if any, is well shaped and maintained;

(xi) There is no unauthorized grazing or vehicular traffic on the levees;

(xii) Encroachments are not being made on the levee right-of-way which might endanger the structure or hinder its proper and efficient functioning during times of emergency.

Such inspections shall be made immediately prior to the beginning of the flood season; immediately following each major high water period, and otherwise at intervals not exceeding 90 days, and such immediate times as may be necessary to insure the best possible care of the levee. Immediate steps will be taken to correct dangerous conditions disclosed by such inspections. Regular maintenance repair measures shall be accomplished during the appropriate season as scheduled by the Superintendent.

(2) *Operation.* During flood periods the levee shall be patrolled continuously to locate possible sand boils or unusual wetness of the landward slope and to be certain that:

(i) There are no indications of slides or sloughs developing;

- (ii) Wave wash or scouring action is not occurring;
- (iii) No low reaches of levee exist which may be overtopped;
- (iv) No other conditions exist which might endanger the structure.

Appropriate advance measures will be taken to insure the availability to adequate labor and materials to meet all contingencies. Immediate steps will be taken to control any condition which endangers the levee and to repair the damaged section.

(c) *Flood walls-* (1) *Maintenance.* Periodic inspections shall be made by Superintendent to be certain that:

- (i) No seepage, saturated areas, or sand boils are occurring;
- (ii) No undue settlement has occurred which affects the stability of the wall or its water tightness;
- (iii) No trees exist, the roots of which might extend under the wall & offer accelerated seepage paths;
- (iv) The concrete has not undergone cracking, chipping, or breaking to an extent which might affect the stability of the wall or its water tightness;
- (v) There are no encroachments upon the right-of-way which might endanger the structure or hinder its functioning in time of flood;
- (vi) Care is being exercised to prevent accumulation of trash and debris adjacent to walls, and to insure that no fires are being built near them;
- (vii) No bank caving conditions exist riverward of the wall which might endanger its stability;
- (viii) Toe drainage systems and pressure relief wells are in good working condition, and that such facilities are not becoming clogged.

Such inspections shall be made immediately prior to the beginning of the flood season, immediately following each major high water period, and otherwise at intervals not exceeding 90 days. Measures to eliminate encroachments and effect repairs found necessary by such inspections shall be undertaken immediately. All repairs shall be accomplished by methods acceptable in standard engineering practice.

(2) *Operation.* Continuous patrol of the wall shall be maintained during flood periods to locate possible leakage at monolith joints or seepage underneath the wall. Floating plant or boats will not be allowed to lie against or tie up to the wall. Should it become necessary during a flood emergency to pass anchor cables over the wall, adequate measures shall be taken to protect

the concrete and construction joints. Immediate steps shall be taken to correct any conditions which endanger the stability of the wall.

(d) *Drainage structures -* (1) *Maintenance.* Adequate measures shall be taken to insure that inlet and outlet channels are kept open and that trash, drift, or debris is not allowed to accumulate near drainage structures. Flap gates and manually operated gates and valves on drainage structures shall be examined, oiled, and trial operated at least once every 90 days. Where drainage structures are provided with stop log or other emergency closures, the condition of the equipment and its housing shall be inspected regularly and a trial installation of the emergency closure shall be made at least once each year. Periodic inspections shall be made by the Superintendent to be certain that:

- (i) Pipes, gates, operating mechanisms, riprap, and headwalls are in good condition;
- (ii) Inlet and outlet channels are open;
- (iii) Care is being exercised to prevent the accumulation of trash and debris near the structures in that no fires are being built near bituminous coated pipes;
- (iv) Erosion is not occurring adjacent to the structures which might endanger its water tightness or stability.

Immediate steps will be taken to repair damage, replace missing or broken parts, or remedy adverse conditions disclosed by such inspections.

(2) *Operation.* Whenever high water conditions impede, all gates will be inspected a short time before water reaches the invert of the pipe and any object which might prevent closure of the gate shall be removed. Automatic gates shall be closely observed until it has been ascertained that they are securely closed. Manually operated gates and valves shall be closed as necessary to prevent inflow of flood water. All drainage structures and levees shall be inspected frequently during floods to ascertain whether seepage is taking place along the lines of their contact with the embankment. Immediate steps shall be taken to correct any adverse conditions.

(e) *Closure structures -* (1) *Maintenance.* Closure structures for the traffic openings shall be inspected by the Superintendent every 90 days to be certain that:

- (i) No parts are missing;
- (ii) Metal parts are adequately covered with paint;
- (iii) All moveable parts are in satisfactory working order;
- (iv) Proper closure can be made promptly when necessary;
- (v) Sufficient materials are on hand for the erection of sandbag closures and that the location of such materials will be readily accessible in times of emergencies.

Tools and parts shall not be removed for other use. Trial erections of one or more closure structures shall be made once each year, alternating the structures chosen so that each gate will be erected at least once in each three-year period. Trial erections of all closure structures shall be made whenever a change is made in key operating personnel. Where railroad operation makes trial erection of a closure structure in feasible, rigorous inspection and drill of operating personnel may be substitute therefore. Trial erection of sandbag closures is not required. Closure materials will be carefully checked prior to and following flood periods, and damaged or missing parts shall be repaired or replaced immediately.

(2) *Operation.* Erection of each moveable closure shall be started in sufficient time to permit completion before flood waters reach the top of the structure sill. Information regarding the proper method of erecting each individual closure structure, together with an estimate of the time required by an experienced crew to complete its erection will be given in the Operation and Maintenance Manual which will be furnished local interests upon completion of the project. Closure structures will be inspected frequently during flood periods to ascertain that no undue leakage is occurring and that drains provided to care for the ordinary leakage are functioning properly. Boats or floating plant shall not be allowed to tie up to closure structures or to discharge passengers or cargo over them.

(f) *Pumping plants*

(1) *Maintenance.* Pumping plants shall be inspected by the Superintendent at intervals not to exceed 30 days during flood seasons and 90 days during off-flood seasons to insure that all equipment is in order for instant use. At regular intervals, proper measures shall be taken to provide for cleaning plant, buildings, and equipment, repainting as necessary, and lubricating all machinery. Adequate supplies of lubri-

cants for all types of machine, fuel for gasoline or diesel powered equipment, and flashlights or lanterns for emergency lighting shall be kept on hand at all times. Telephone service shall be maintained at pumping plants. All equipment, including switch gear, transformers, motors, pumps, valves, and gates shall be trial operated and checked at least once every 90 days. Megger tests of all insulation shall be made whenever wiring has been subject to undue dampness and otherwise at intervals not to exceed one-year period. A record shall be kept showing the results of such test period. Wiring disclosed to be in an unsatisfactory condition by such tests shall be brought to a satisfactory condition or shall be properly replaced. Diesel and gasoline engines shall be started at such intervals and allowed to run for such length of time as may be necessary to insure their service ability in times and emergencies. Only skilled electricians and mechanics shall be employed on test and repairs. Operating personnel for the plant shall be present during tests. Any equipment removed from the station for repair or replacement shall be repaired or replaces as soon as practicable and shall be trial operated after reinstallation. Repairs requiring removal of equipment from the plant shall be made during off-flood seasons insofar as practicable.

(2) *Operation.* Competent operators shall be on duty at pumping plants whenever it appears that necessity for pump operation is imminent. The operator shall thoroughly inspect, trial operate, and place in readiness all plant equipment. The operator shall be familiar with the equipment manufacturers' instructions and drawings and with the "Operating Instructions" for each station. The equipment shall be operated in accordance with the above hyphened mentioned "Operation Instructions" and care shall be exercised at proper lubrication is being supplied all equipment, and that no overheating, undue vibration or noise is occurring. Immediately upon final recession of flood waters, the pumping station shall be thoroughly cleaned, pumphouse sumps flushed, and equipment thoroughly inspected, oiled and greased. A record or log of pumping plant operation shall be kept for each station, a copy of which shall be furnished to the District Engineer following each flood.

(g) *Channels and Floodways -*

(1) *Maintenance.* Periodic inspections of improved channels and floodways shall be made by the Superintendent to be certain that:

(i) The channel or floodway is clear of debris, weeds, and wild growth;

(ii) The channel or floodway is not being restricted by the depositing of waste material, building of unauthorized structures or encroachments;

(iii) The capacity of the channel or floodway is not being reduced by the formation of shoals;

(iv) Banks are not being damaged by rain or wave wash, and that no sloughing of banks has occurred;

(v) Riprap sections and deflection dikes and walls are in good condition;

(vi) Approach and egress channels adjacent to the improved channel or floodway are sufficiently clear of obstructions and debris to permit proper functioning of the project works.

Such inspections shall be made prior to the beginning of the flood season and otherwise intervals not to exceed 90 days. Immediate steps will be taken to remedy any adverse conditions disclosed by such inspections. Measures will be taken by the Superintendent to promote the growth of grass on bank slopes and earth deflection dikes. The Superintendent shall provide for periodic repair and cleaning of debris basins, check dams, and related structures as may be necessary.

(2) *Operations.* Both banks of the channel shall be protrolled during periods of high waters and measures shall be taken to protect those reaches being attacked by the current or by wave wash. Appropriate measures shall be taken to prevent the formation of jams of ice or debris. Large objects which become lodged against the bank shall be removed. The improved channel or floodway shall be thoroughly inspected immediately following each major high water period. As soon as practicable thereafter, all snags and other debris shall be removed and all damage to the banks, riprap, deflection dikes and walls, drainage outlets, or other flood control structures repaired.

(h) *Miscellaneous Facilities - (1) Maintenance.* Miscellaneous structures and facilities constructed as part of the protective works and other structures and facilities which function as a part of, or affect the efficient functioning of the protective works, shall be periodically inspected by the Superintendent and the

appropriate maintenance measures taken. Damaged or unserviceable parts shall be repaired or replaced without delay. Areas used for ponding in connection with pumping plants or for temporary storage of interior runoff during flood period shall not be allowed to become filled with silt, debris, or dumped material. The Superintendent shall take proper steps to prevent restriction of bridge openings and, where applicable, shall provide temporary raising during floods of bridges which restrict channel capacities during high flows.

(2) *Operation.* Miscellaneous facilities shall be operated to prevent or reduce flooding during periods of high water. Those facilities constructed as part of the protective works shall not be used for purposes other than flood protection without approval of the District Engineer unless design therefore.

(49 Stat. 1571, 50 Stat. 877; and 55 Stat. 638; 33 U.S.C. 701c; 701c-1) (Regs. 9 August 1944, CE SPEWF)

[SEAL] J.A. ULIO

Major General

The Adjutant General

[F.R. Doc 44-12255; Filed, August 16, 1944; 9:44 a.m.]



**APPENDIX B**

**ASSURANCES OF LOCAL  
COOPERATION**

LOCAL COOPERATION AGREEMENT  
BETWEEN  
THE DEPARTMENT OF THE ARMY  
AND  
THE BELFAST WATER DISTRICT  
FOR CONSTRUCTION OF THE  
LITTLE RIVER LOWER DAM PROJECT  
BELFAST, MAINE

This Agreement entered into this twenty-third day of June, 1988, by and between THE DEPARTMENT OF THE ARMY (hereinafter referred to as "Government"), acting by and through the Commander, US Army Engineer Division, New England, and THE BELFAST WATER DISTRICT (hereinafter referred to as "Local Sponsor"), acting by and through its Board of Trustees.

WITNESSETH THAT:

WHEREAS, the authority for the construction of the emergency shore line protection, at Little River (hereafter called the "Project") not specifically authorized by Congress is contained in Section 14 of the 1948 Flood Control Act, P.L. 79-526, as amended; and,

WHEREAS, construction of the Project is described in a report entitled "Little River Lower Dam, Belfast, Maine", prepared by the Division Engineer, US Army Division, New England, dated February 1987 and approved by the Chief of Engineers on 23 May 1988; and

WHEREAS, the Water Resources Development Act of 1986, Public Law 99-662, specifies the cost-sharing requirements applicable to the Project; and

NOW, THEREFORE, the parties agree as follows:

ARTICLE I - DEFINITIONS

For purposes of this Agreement:

1. The term "project" shall mean the construction of an 80 foot long precast concrete retaining wall extending downstream from the southern abutment of the Little River Dam.

2. The term "total project costs" shall mean all costs incurred by the Local Sponsor and the Government directly related to construction of the project. Such costs shall include, but not necessarily be limited to, actual construction cost, costs of applicable engineering and design, supervision and administration costs, costs of project construction contract dispute settlements or awards, and the value of lands, easements, and rights-of-way, relocations and dredged material disposal areas provided for the project by the local sponsor, but shall not include any costs for betterments or operation and maintenance, nor Government costs for preauthorization studies.

3. The term "period of construction" shall mean the time from the advertisement of the first construction contract to the time of acceptance of the project by the Contracting Officer.

4. The term "Contracting Officer" shall mean the Commander of the U. S. Army Engineer Division, New England Division, or his designee.

5. The term "highway" shall mean any highway, thoroughfare, roadway, street, or other public or private road or way.

## ARTICLE II - OBLIGATIONS OF PARTIES

a. The Government, subject to and using funds provided by the local sponsor and appropriated by the Congress, shall expeditiously construct the Project applying those procedures usually followed or applied in Federal projects, pursuant to Federal laws, regulations, and policies. The local sponsor shall be afforded the opportunity to review and comment on all contracts, including relevant plans and specifications, prior to the issuance of invitations for bids. The local sponsor also shall be afforded the opportunity to review and comment on all modifications and change orders prior to the issuance to the contractor of a Notice to Proceed. The Government will consider the view of the sponsor, but award of the contracts and performance of the work thereunder shall be exclusively within the control of the Government so long as the financial commitment of the local sponsor is not changed without local sponsor's consent.

b. When the Government determines that the project, or functional element thereof is complete, the Government shall turn the project or element over to the local sponsor, which shall accept the project or element and be solely responsible for operating, maintaining, and rehabilitating the project or element in accordance with Article VIII hereof.

c. As further specified in Article VI hereof, the local sponsor shall provide, during the period of construction, a cash contribution of 5 percent of total project costs.

d. As further specified in Article III hereof, the local sponsor shall provide all lands, easements, rights-of-way, and perform all relocations and alterations of buildings, utilities, highways, bridges (other than railroad bridges), sewers, and related and special facilities determined by the Government to be necessary for construction of the project.

e. If the value of the contributions provided under paragraphs c. and d. of this Article represents less than 25 percent of total project costs, the local sponsor shall provide during the period of construction an additional cash contribution in the amount necessary to make its total contribution equal to 25 percent of total project costs.

f. The local sponsor recognizes that the Federal statutory cost limitation is \$500,000. In no instance shall the Government's share of project costs, including preauthorization planning costs (reconnaissance

studies, feasibility studies, etc), exceed this limitation.

h. Notwithstanding any other provision of this Agreement, if the award of any contract for construction of the project would result in the total obligations and expenditures for construction of the project exceeding \$200,000, the award of that contract and subsequent contracts shall be deferred until such time as both parties to this Agreement agree to resume construction of the project.

### ARTICLE III - LANDS, FACILITIES, AND RELOCATION ASSISTANCE

a. Prior to the advertisement of any construction contract, the local sponsor shall furnish to the Government all lands, easements, and rights-of-way, as may be determined by the Government to be necessary for construction of the project, and shall furnish to the Government evidence supporting the sponsor's legal authority to grant rights-of-entry to all such lands.

b. Upon notification from the Government, the local sponsor shall accomplish or arrange for accomplishment at no cost to the Government all alterations and relocations of storm drains, utilities, and other facilities determined by the Government to be necessary for construction of the project.

### ARTICLE IV - VALUE OF LANDS AND FACILITIES

a. The value of the lands, easements, and rights-of-way to be included in total project costs and credited toward the local sponsor's share of total project costs will be determined in accordance with the following procedures:

1. If the lands, easements, or rights-of-way are owned by the sponsor as of the date this Agreement is signed, the credit shall be the fair market value of the interest at the time such interest is made available to the Government for construction of the project. The fair market value shall be determined by an appraisal, to be obtained by the sponsor, which has been prepared by an independent and qualified appraiser who is acceptable to both the sponsor and the Government. The appraisal shall be reviewed and approved by the Government.

2. If the lands, easements, or rights-of-way are to be acquired by the sponsor after the date this Agreement is signed, the credit shall be the fair market value of the interest at the time such interest is made available to the Government for construction of the project. The fair market value shall be determined as specified in subparagraph 1. above. If the sponsor pays an amount in excess of the appraised fair market value, it may be entitled to a credit for the excess if the sponsor has secured prior written approval from the Government of its offer to purchase such interest.

## ARTICLE V - CONSTRUCTION PHASING AND MANAGEMENT

a. To provide for consistent and effective communication between the local sponsor and the Government during the term of construction, the local sponsor and the Government shall appoint representatives to coordinate on scheduling, plans, specifications, modifications, contract costs, and other matters relating to construction of the project.

b. The representatives appointed above shall meet as necessary during the term of project construction and shall make such recommendations as they deem warranted to the Contracting Officer.

c. The Contracting Officer shall consider the recommendations of said representatives in all matters pertaining to the project, but the Contracting Officer, having ultimate responsibility for construction of the project, has complete discretion to accept, reject, or modify the recommendations.

## ARTICLE VI - METHOD OF PAYMENT

a. The local sponsor shall provide, over the term of construction, the amounts required under Article II.c., Article II.e., and Article II.f. of this Agreement. Total project costs are presently estimated to be \$171,000. In order to meet its share, the local sponsor must provide a cash contribution of \$43,000 which include all amounts payable under Article II(c).

b. The required cash contribution shall be provided as follows: 30 days prior to the award of the first construction contract, the Government shall notify the sponsor of its share of project costs. Within 15 days thereafter, the sponsor shall provide the Government the full amount of the required contribution by delivering a check payable to "FAO, USAED, NED" to the Contracting Officer representing the Government.

c. In no event shall total project costs exceed the estimate given at the outset of construction without the consent of the local sponsor in writing; the additional contribution required to meet its share of the revised project cost as agreed upon herein. Within 5 days thereafter, the local sponsor shall provide the Government the full amount of the additional required contribution.

d. Upon completion of the project and resolution of all relevant contract claims and appeals, the Government shall compute the total project cost and tender to the local sponsor a final accounting of its share of total project costs. In the event the total contribution by the local sponsor is less than its required share of total project costs at the time of the final accounting, the local sponsor shall deposit within 90 calendar days after the receipt of written notice, make a cash payment to the government of whatever sum is required to meet its minimum required share of project costs not to exceed the amount called for by Article VI.a.

e. In the event the local sponsor has made cash contributions in excess of its share of total project costs which result in the local sponsor's having provided more than its required total share of total project costs, the Government shall within 90 days of the final accounting subject to the availability of appropriations, and subject to the Federal statutory cost limitations set out in Article II.f., return said excess to the sponsor; however, the sponsor shall not be entitled to any refund of the 5 percent cash contribution required pursuant to Article II.c. hereof.

f. If the sponsor's total contribution under this Agreement (including lands, easement, rights-of-way, relocations, and dredged material disposal areas provided by the sponsor) exceeds 50 percent of total project costs, the Government shall, subject to the availability of appropriations, and subject to the federal statutory cost limitation set out in Article II.f., refund the excess to the sponsor within 90 days of the final accounting.

#### ARTICLE VII - DISPUTES

Before any party to this Agreement may bring suit in any court concerning an issue relating to this Agreement, such party must first seek in good faith to resolve the issue through negotiation or other forms of nonbinding alternate dispute resolution mutually acceptable to the parties.

#### ARTICLE VIII - OPERATION, MAINTENANCE AND REHABILITATION

a. After it is turned over by the Government, the local sponsor shall operate, maintain, replace, and rehabilitate the project or functional element thereof, in accordance with regulations or directions prescribed by the Government.

b. The local sponsor hereby gives the Government a right to enter, at reasonable times and in a reasonable manner, upon land which it owns or controls for access to the project for the purpose of inspection, and, if necessary, for the purpose of completing, operating, repairing, maintaining, replacing, or rehabilitating the project. If an inspection shows that the local sponsor for any reason is failing to fulfill its obligations under this Agreement without receiving prior written approval from the Government, the Government will send a written notice to the local sponsor. If the local sponsor persists in such failure for 30 calendar days after receipt of the notice, then the Government shall have a right to enter, at reasonable times and in a reasonable manner, upon lands the local sponsor owns or controls for access to the project for the purpose of completing, operating, repairing, maintaining, replacing, or rehabilitating the project. No completion, operation, repair, maintenance, replacement, or rehabilitation by the Government shall operate to relieve the local sponsor of responsibility to meet its obligations as set forth in this Agreement, or to preclude the Government from pursuing any other remedy at law or equity to assure faithful performance pursuant to this Agreement.

#### ARTICLE IX - RELEASE OF CLAIMS

The local sponsor shall hold and save the Government free from all damages arising from the construction and operation of the completed project, except for damages due to the fault or negligence of the Government or its contractors.

#### ARTICLE X - MAINTENANCE OF RECORDS

The Government and the local sponsor shall keep books, records, documents, and other evidence pertaining to costs and expenses incurred pursuant to this Agreement to the extent and in such detail as will properly reflect total project costs. The Government and the local sponsor shall maintain such books, records, documents, and other evidence for a minimum of three years after completion of construction of the project and resolution of all claims arising therefrom, and shall make available at their offices at reasonable times, such books, records, documents, and other evidence for inspection and audit by authorized representatives of the parties to this Agreement.

#### ARTICLE XI - FEDERAL AND STATE LAWS

In acting under its rights and obligations hereunder, the local sponsor agrees to comply with all applicable Federal and State laws and regulations, including Section 601 of Title VI of the Civil Rights Act of 1964 (Public Law 88-352) and Department of Defense Directive 5500.II issued pursuant thereto and published in Part 300 of Title 32, Code of Federal Regulations, as well as Army Regulation 600-7, entitled "Nondiscrimination on the Basis of Handicap in Programs and Activities Assisted or Conducted by the Department of the Army."

#### ARTICLE XII - RELATIONSHIP OF PARTIES

The parties to this Agreement act in an independent capacity in the performance of their respective functions under this Agreement, and neither party is to be considered the officer, agent, or employee of the other.

#### ARTICLE XIII - OFFICIALS NOT TO BENEFIT

No member of or delegate to the Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom.

#### ARTICLE XIV - COVENANT AGAINST CONTINGENT FEES

The local sponsor warrants that no person or selling agency has been employed or retained to solicit or secure this Agreement upon agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the local sponsor for the purpose of securing business. For breach or violation of this warranty, the Government shall have the right to annul this Agreement without liability, or, in its discretion, to add to the Agreement or

consideration, or otherwise recover, the full amount of such commission, percentage, brokerage, or contingent fee.

#### ARTICLE XV - TERMINATION OR SUSPENSION

a. If at any time the local sponsor fails to make the payments required under this Agreement, the Secretary of the Army shall terminate or suspend work on the project until the local sponsor is no longer in arrears or unless the Secretary determines that continuation of work on the project is in the interest of the United States. Any delinquent payment shall be charged interest at a rate, to be determined by the Secretary of the Treasury, equal to 150 per centum of the average bond equivalent rate of the 13-week Treasury bills auctioned immediately prior to the date on which such payment became delinquent, or auctioned immediately prior to the beginning to each additional 3-month period if the period of delinquency exceeds 3 months.

b. If the Government fails to receive annual appropriations in amounts sufficient to meet expenditures for the then-current fiscal year, the Government shall so notify the local sponsor. After 60 days either party may elect without penalty to terminate the Agreement or to suspend performance thereunder, and the parties shall proceed to wind up their activities relating to the project and proceed to a final accounting in accordance with Article VI.

#### ARTICLE XVI - OBLIGATION OF FUTURE APPROPRIATIONS

Nothing herein shall constitute, or be deemed to constitute, an obligation of future appropriations by the legislature of the State of Maine.

#### ARTICLE XVII - ABILITY TO PAY-NON-FEDERAL COST SHARE

The project does not qualify for a revision to the non-Federal cost share for flood control based on estimated flood control benefits control Cost Sharing Requirements Under the ability to Pay Provision; Interim Final Rule (Vol. 52 Federal Register pages 35872-35892, 1987 to be codified at (33 C.F.R., Sections 241.1-.6), implementing Section 103(m) leading to this conclusion is shown in Exhibit B. This exhibit documents that the local sponsor is not eligible for any reduction in their cost sharing requirements as a result of the ability to pay analysis.

#### ARTICLE XVIII - NOTICES

a. All notices, requests, demands, and other communications required or permitted to be given under this Agreement shall be deemed to have been duly given if in writing and delivered personally, given by prepaid telegram, or mailed by first-class (postage-prepaid), registered, or certified mail, as follows:



If to the local sponsor:

Ms. Jill B. Goodwin, Chairman  
Belfast Water District  
P. O. Box 506  
Belfast, Maine 04915

If to the Government:

Division Engineer  
U. S. Army, Corps of Engineers  
New England Division  
424 Trapelo Road  
Waltham, Massachusetts 02254-9149

b. A party may change the address to which such communications are to be directed by giving written notice to the other in the manner provided in this section.

c. Any notice, request, demand, or other communication made pursuant to this Article shall be deemed to have been received by the addressee at such time as it is personally delivered or on the third business day after it is mailed, as the case may be.

#### ARTICLE XVIII - CONFIDENTIALITY

To the extent permitted by the law governing each party, the parties agree to maintain the confidentiality of exchanged information when requested to do so by the providing party.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement as of the day and year first above written.

  
Witness

THE DEPARTMENT OF THE ARMY

by: 

Thomas A. Rhen, Colonel  
Corps of Engineers Commanding

  
Witness

THE BELFAST WATER DISTRICT

by: 

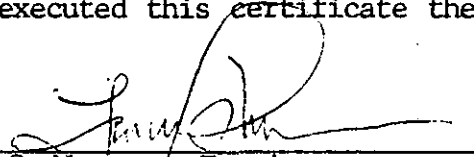
Jill B. Goodwin, Chairman  
Board of Trustees

BWD/Army  
FCM/cfh

CERTIFICATION OF AUTHORITY

I, Francis C. Marsano, do hereby certify that I am Counsel for the Belfast Water District, that the District is legally constituted public body with full authority and legal capability to perform the terms of the Agreement between the United State of America and the Belfast Water District in connection with the Little River Lower Dam in Belfast, Maine, and to pay damages if necessary in the event of failure to perform in accordance with Section 221 of Public Law 91-611, and that the person who has executed the contract on behalf of the District has acted within her statutory authority.

IN WITNESS WHEREOF, I have made and executed this certificate the twenty-third day of June, 1988.



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Francis C. Marsano, Esquire  
Counsel for Belfast Water District

BWD/Army  
FCM/cfh

## EXHIBIT B

### ABILITY TO PAY ANALYSIS

Section 103(m) of the Water Resources Development Act of 1986 states that any cost sharing agreement for flood control made under the terms of Section 103 of the Act shall be subject to the ability of a non-Federal interest to pay. The Corps' Cost Sharing Requirements Under the Ability to Pay Provision; (to be codified at 33 C.F.R., Sections 241.1 - .6). This project does not qualify for a cost share reduction under the Ability to Pay for the following reasons:

The estimated normal local cost share (flood control costs only) = 25%.

The ratio of flood control benefits to flood control costs.

The Benefits Based Floor =  $.25 \times 1.37 = .343$ .

Convert to percentage = 34.3%.

If the benefits based floor converted to a percentage is less than the normal cost share percentage, the ability to pay provisions apply. Since for this project, the normal local cost share is less than the Benefits Based Floor, there is no Ability to Pay cost share.

BWD/Army  
FCM/cfh

**APPENDIX C**

**INSPECTION REPORT FORMS**

DESIGNATION OF SUPERINTENDENT

Name Of Project: \_\_\_\_\_

Location: \_\_\_\_\_

MAINTAINING MUNICIPAL AGENCY:

Agency: \_\_\_\_\_

Address: \_\_\_\_\_ Tel. No. \_\_\_\_\_

"SUPERINTENDENT" - as required by Section 208.10 (a) (2), Chap II,  
Title 33 USC

Name & Title: \_\_\_\_\_

Employed by: \_\_\_\_\_

Business Address: \_\_\_\_\_

Business Tel. No: \_\_\_\_\_

Nights, Sundays, Address: \_\_\_\_\_

Nights, Sundays, Tel. No: \_\_\_\_\_

Remarks:

Signed \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

NOTE: To be submitted and updated as necessary by the responsible agency which will maintain and operate the works in accordance with regulations prescribed by the Secretary of the Army as required by law (Title 33, Chap. 208, Sec II, USC).

# LOCAL FLOOD PROTECTION PROJECT INSPECTION REPORT

**Project:**

**Maintaining Agency:**

**Type Inspection:** \_\_\_\_\_ Semi-Annual Staff \_\_\_\_\_ 90 Day Interim

**River Basin:**

**Date of Inspection**

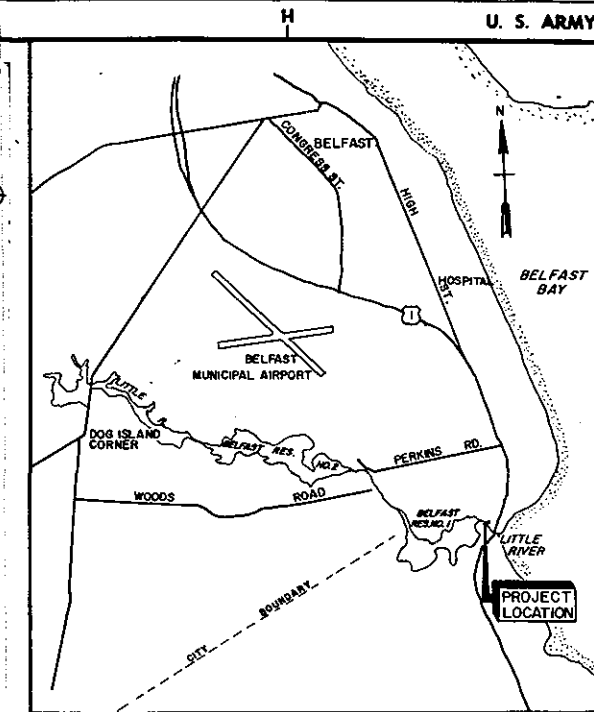
Feature	Sat	Unsat	Deficiencies
<b>PUMPING STATIONS - STRUCTURES</b>			
INTERIOR			
EXTERIOR			
<b>PUMPS - MOTORS - ENGINES</b>			
TRIAL OPERATED			
GENERAL CONDITION			
POWER SOURCE			
INSULATION TESTS			
METAL INTAKES/OUTLETS			
GATE VALVES			
<b>GATES - DRAINAGE STRUCTURES</b>			
TRIAL OPERATED			
GENERAL CONDITION			
LUBRICATION			
GENERAL CONDITION			
SLOPES/EROSION			
SAND BOILS/CAVING			
TRESPASSING			
SLOPE PROTECTION			
DRAINS			
<b>STOP-LOGS - LOG BOOM</b>			
CONDITION OF LOGS			
AVAILABILITY OF LOGS			
HIGHWAY SLOTS			
STORAGE FACILITIES			
<b>CHANNELS - OUTLET WORKS CHANNEL</b>			
BANKS			
OBSTRUCTION CONTROL			

Feature	Sat	Unsat	Deficiencies
<b>CONCRETE STRUCTURES</b>			
SURFACE			
SETTLEMENT			
JOINTS			
DRAINS			
<b>MISCELLANEOUS</b>			
EMERGENCY OPER. PLAN			
EMERGENCY EQUIPMENT			
SEMI-ANNUAL REPORT			
<b>Inspection Party:</b>  <b>Photographs Taken:</b>  <b>Remarks &amp; Additional Comments:</b> ( Indicate Here Observations, Discussions, Specific Feature Deficiencies, Recommendations and any other pertinent information. Use Continuation Sheet if necessary. )			
X ALL APPLICABLE ITEMS. IF UNSAT INDICATE SPECIFIC DEFICIENCIES. INDICATE IF NOT APPLICABLE.			
DATE	INSPECTED BY: TYPED NAME & TITLE		SIGNATURE

**APPENDIX D**

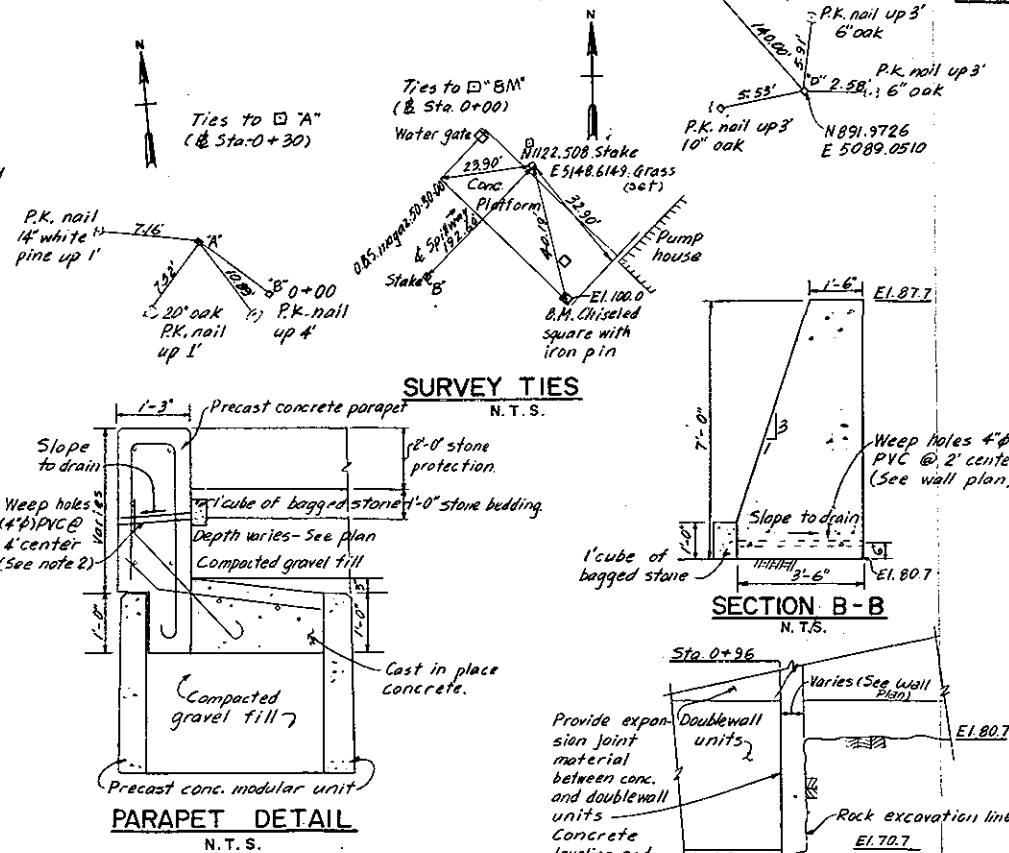
**AS-BUILT DRAWINGS**





ABUTMENT WALL PLAN  
N.T.S.

**LOCATION MAP**  
SCALE: 1:24000

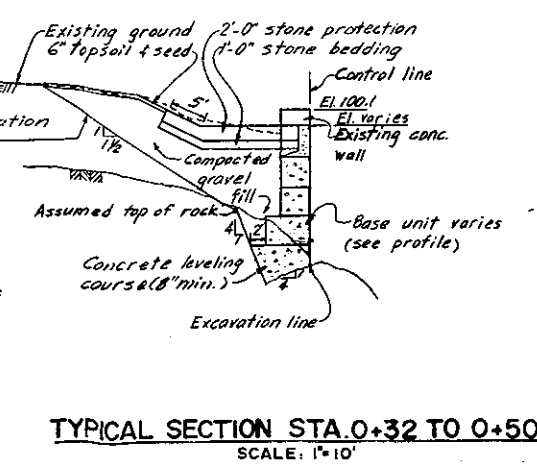


PRECAST CONCRETE MODULAR WALL PROFILE  
SCALE: 1" = 5'

PARAPET DETAIL  
N T S

SECTION B - B  
N.T.S.

ELEVATION A-A



**TYPICAL SECTION STA.0+70 TO 0+96**  
SCALE: 1" = 10'

TYPICAL SECTION STA. 0+50 TO 0+70  
SCALE: 1" = 10'

**TYPICAL SECTION STA. 0+32 TO 0+50**  
SCALE: 1"=10'

NOTES:

1. The Contractor's Staging Area is located on the Belfast Water Districts property off U.S. Route 1, See 'Access To Site Plan'.
2. Keep hole details for parapet to be provided in submitted shop drawings.
3. Assumed datum El. 100.0, see B.M. Ties to  $\square$  'B'
4. The elevation of mean high water is El 75.0, the elevation of mean low water is El 65.0

**A. B. Shaw**

9-16-92	Final field corrections
7-5-88	Size of modular unit cho

DATE	DESCRIPTION	BY
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DEPARTMENT OF THE ARMY  
NEW ENGLAND DIVISION  
CORPS OF ENGINEERS  
WALTHAM, MASS.

BY J.J.	DR. BY A.W.C.	CK. BY W.D.J.	WATER RESOURCES DEVELOPMENT PROJECT BELFAST MAINE
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**LITTLE RIVER DAM**  
**EMERGENCY STREAMBANK PROTECTION**


EMERGENCY STREAMBANK PROTECTION  
PLANS, SECTIONS AND PROFILE  
LITTLE RIVER MAIN

APPROVED B. L. [Signature] DATE JUNE, 1988  
CHIEF, ENGINEERING DIVISION

SCALE AS SHOWN SPEC. NO. DAGW33-88-B-00  
DRAWING NUMBER  
P. 1

BEL-1

SHEET 1



**GRAPHIC SCALES**

0 50 100

0 100 200

0 100 200 300 400

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